

REMARKS

Reconsideration and allowance of the subject application are respectfully solicited.

Claims 1, 9, and 11 are pending, with Claim 1 being independent. Claims 2, 4, 5, 6, and 7 have been cancelled without prejudice. Claim 1 has been amended, with Claim 1 having been amended to include the features of Claims 2, 4, 5, and 7 (with deletion of the expression “at least” from Claim 7 before the inclusion).

Claims 1, 2, 4 through 7, 9, and 11 were rejected again under 35 U.S.C. § 103 over US 2004/0201048 A1 (Seki, et al.) in view of U.S. Patent No. 5,470,760 (Nakai) and US 2002/0187312 A1 (Fonash, et al.). All rejections are respectfully traversed.

Claim 1 recites, *inter alia*, (a) forming partition walls from a resin composition containing carbon black, in combination with (b) performing a plasma treatment by irradiating the substrate subjected to the dry etching process with plasma in an atmosphere formed by introducing a mixture of a halogen gas as claimed and O₂ gas wherein the amount of O₂ gas is not greater than 30%, each partition wall shows a surface having a contact angle of not smaller than 110° and Ra of between 3nm and 50nm which is greater than before the dry etching and the substrate shows a surface having a contact angle of not greater than 20°.

(By way of explanation and not of limitation, Applicants respectfully note that in the present invention, a substrate carrying partition walls formed thereon may be subjected to a dry etching process and then to a plasma treatment process; the dry etching process removes impurities having adhered to the substrate in the partition wall forming step,

thereby imparting an improved ink-affinity to the surface of the substrate; the subsequent plasma treatment process, on the other hand, imparts not only an enhanced ink-repellence but also an increased surface coarseness to the upper and lateral surfaces of the partition walls; therefore, ink applied to the areas (openings) surrounded by the partition walls will spread well in the areas and be brought into contact with the surfaces of the partition walls; since the partition walls have an increased surface coarseness, the ink once brought into contact with the lateral surfaces of the partition walls will keep the contacted state regardless of the ink-repellence of the partition walls; thus, in the present invention, the formation of "blank areas" is effectively prevented; in addition, after the applied ink is completely set, the surface of each pixel is made flat to avoid any unevenness in color density; see page 35, line 12 through page 36, line 6 of the original specification; this surface flattening effect is significantly caused to occur in the present invention since the ink contains a setting ingredient; further, since the dry etching process performed previously to the plasma treatment process also increases the surface coarseness, hence the surface area, of the partition walls, fluorine or fluorine compounds will intrude and diffuse into the surface layers of the partition walls in the subsequent plasma treatment; in particular, since the partition walls are formed from a resin composition containing carbon black, it is exposed at a surface of the partition walls in the dry etching process and fluorine or fluorine compounds will be bonded to the exposed carbon black in the plasma treatment process to exhibit a very high ink-repellence (i.e., showing a surface having a contact angle relative to pure water of not smaller than 110°); see page 31, lines 5 to 14 of the original specification; the effect of exposing carbon black is promoted by using a mixture of a

halogen gas and O₂ gas; see page 37, lines 21 to 24 of the original specification; also, compare Example 1 and Example 4; as a result of the combined effects explained above, in the present invention, both “intermingling of colors” and “blank areas” are effectively prevented at the same time.)

However, Applicants respectfully submit that none of Seki, et al., Nakai, and Fonash, et al., even in the proposed combinations, assuming, *arguendo*, that such could be combined, discloses or suggests at least the above-discussed combination of claimed features as recited, *inter alia*, in Claim 1.

The Official Action acknowledges that Seki, et al. lacks carbon black as in feature (a) above, but alleges at page 6 that Seki, et al. shows using a mixture of O₂ and CF₄, SF₆, and CHF₃ for the fluorine plasma treatment wherein the O₂ comprises 25% (Fig. 9 and [0178]) and therefore satisfies feature (b). Applicants respectfully traverse this allegation. Applicants respectfully submit that Seki, et al.’s 4th embodiment (Fig. 9 and [0178]) does not state that the claimed dry etching process is performed prior to the use of CF₄/O₂, and therefore such constitutes neither a description nor a suggestion of feature (b). In this regard, Applicants respectfully submit that Seki, et al.’s Fig. 9 shows that when a gas mixture is used at the optimum ratio, the effect of plasma treatment using fluorine gas is suppressed and the contact angle of polyimide is reduced, whereas in the present invention, the surface coarseness and the contact angle are increased as a result of the combined effect of the gas mixture and the partition walls formed from a resin containing carbon black.

Nakai is relied upon in the Official Action for showing carbon black, and Fonash, et al. is relied upon in the Official Action for showing angles greater than 100°; however, Applicants respectfully submit that neither document discloses or suggests applying ink to the areas surrounded by partition walls prepared and treated in the above-discussed combination of features as claimed, and that neither document recognizes any necessity for an increased coarseness and an enhanced ink-repellence of the partition walls nor for an enhanced ink affinity of the substrate surface.

As such, it is further respectfully submitted that there has been no showing of any indication of motivation in the cited documents that would lead one having ordinary skill in the art to arrive at the above-discussed combination of claimed features.

The dependent claims are also submitted to be patentable because they set forth additional aspects of the present invention and are dependent from independent claims discussed above. Therefore, separate and individual consideration of each dependent claim is respectfully requested.

This Amendment After Final Rejection is an earnest attempt to advance prosecution and reduce the number of issues, and is believed to clearly place this application in condition for allowance. Furthermore, Applicants respectfully submit that a full appreciation of these amendments will not require undue time or effort given the Examiner's familiarity with this application. Moreover, this Amendment was not earlier presented because Applicants earnestly believed that the prior Amendment placed the subject application in condition for allowance. Accordingly, entry of this Amendment under 37 C.F.R. § 1.116 is respectfully requested.

Applicants submit that this application is in condition for allowance, and a Notice of Allowance is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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